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Abstract:

The macroeconomy and social policies can have substantial influences on poverty in the United States. In this paper, I investigate whether these influences differ across metro and nonmetro areas. To do so, using a 16-year panel of state-level data, I estimate state and year fixed effects models separately for metro and nonmetro areas to see if the effects of the macroeconomy and social policies differ between these two areas. These models are estimated using two measures– the poverty rate and the squared poverty gap – and by family type. I find that cyclical forces have a much stronger effect on the poverty rate in nonmetro areas in comparison to metro areas but the effects are similar for the squared poverty gap; wage growth has a pronounced effect on poverty in metro areas but no effect in nonmetro areas; and state-level social policies have slightly larger effects in nonmetro areas but the effects are small.

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Introduction

The economic changes of the past 15 years have transformed the landscape of poverty in the United States. After an initial increase in poverty from 1988 to 1993, there was a 25 percent decline in the poverty rate, from a high of 15.1 percent in 1993 to a low of 11.3 percent in 2000 (Denavas-Walt, Proctor, and Mills 2004: Table B-1). This fall was mirrored among those in highest danger of poverty. For example, the poverty rate of single mothers with children fell from 38.7 percent to 28.5 percent over the same time period (Denavas-Walt et al. 2004: Table B-1). Alongside these economic forces, major policy changes were implemented including the transformation of the welfare system through the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 and a large expansion of the Earned Income Tax Credit (EITC) Program. The improvements in the well-being of low-income Americans over this time period has been ascribed to the strong macroeconomy at both the state and national level and the expansion of the EITC program (Gundersen and Ziliak 2004). The importance of the macroeconomy in improving the well-being of low-income households has been found repeatedly in the large literature looking at the connection between the economy and poverty (e.g., Anderson 1964; Blank and Card 1993; Cutler and Katz 1991; Iceland 2003). Consistent with this research on the importance of macroeconomic growth, the economic downturn of the early 2000s lead to an increase in the poverty rate to 12.5 percent by 2003. In conjunction with changes in macroeconomic conditions, various social policies (e.g., EITC, the minimum wage, cash assistance benefit levels) have also been associated with

changes in aggregate poverty levels (e.g., Gottschalk and Danziger 1985; Hanratty and Blank 1992).

The literature on the effects of the macroeconomy and social policies on poverty for the country as a whole has generally ignored whether the possibilities and constraints afforded by the macroeconomy and social policies differ between non-metropolitan (nonmetro) and metropolitan (metro) areas. If the determinants of poverty in nonmetro areas were similar to those in the rest of the country, this research gap would not be relevant. A reading of the extensive literature on poverty in nonmetro areas, however, would lead one to believe the determinants of poverty are different in rural areas. As it pertains to the possible effects of macroeconomic forces on poverty, this literature has found, in comparison to metro areas, that the economies of nonmetro areas are less diverse, leading to lower resiliency in response to sector-specific economic downturns; nonmetro areas attract fewer high-paying service sector jobs, leading to a more limited ability to capture the returns to growth in the service sector; nonmetro areas have a higher proportion of residents with closer ties to the labor force, making them more susceptible to the consequences of unemployment; and nonmetro areas have more structural impediments to employment such as limited child care options and longer commuting distances and these may make nonmetro residents less able to capitalize on the benefits of increased employment opportunities (Cotter 2002; Davis, Connolly, and Weber 2003; Galston 2000; Hirschl and Brown, 1995; Lichter, Johnston, and McLaughlin 1994; McLaughlin 2002). Conversely, other work has found nonmetro areas to be less influenced by macroeconomic changes in comparison to metro areas (Jensen et al. 1999; Ulimwengu and Kraybill 2004). (For a review of the literature on poverty in rural areas, see Weber and Jensen, 2004.)

There has also been research on how the changes in social policies may have different effects in rural areas. Of particular import in the new welfare system is the emphasis on work. Given the structural impediments facing low-income households noted above, in rural areas low-income households may face greater difficulties in obtaining work which may make them ineligible for the primary cash assistance program for low-income single mothers – the Temporary Assistance for Needy Families (TANF) program. (For examples of work on the effects of changes in welfare programs on the well-being of nonmetro residents, see, e.g., Brown and Lichter 2004; Lee and Singelmann 2005; Weber, Duncan, and Whitener 2002; Weber, Edwards, and Duncan 2004.)

To build on this previous literature, this paper uses techniques that have been applied within the literature looking at the effects of the macroeconomy and social policies on poverty to address the following questions: In comparison to metro areas, is the relationship between the macroeconomy and poverty different in nonmetro areas? And, in comparison to metro areas, are the relationships between social policies and poverty different in nonmetro areas? In answering this question, this paper extends the research on the effects of the macroeconomy and social policies on rural areas in three primary ways. First, I use a 16-year panel of state-level data to incorporate the substantial heterogeneity in poverty, social policies, and the macroeconomy across states and over time. This use of panel data at an annual basis is a departure from the previous research examining whether the macroeconomy has a different influence on poverty in rural areas. This previous research generally used cross-sections of household-level data or differences in poverty between decennial censi.¹ The use of state-level data also allows me to control (via state fixed effects) for the substantial heterogeneity that exists across the United States in both

metro and nonmetro areas. The use of panel data (rather than strictly longitudinal data) also allows me to control (via year fixed effects) for the substantial heterogeneity that exists over time.

Second, I use two measures of poverty – the poverty rate and a poverty index which allows one to measure both the extent and depth of poverty. While the poverty rate (i.e., the fraction of households with incomes below the poverty line) is oft-used and has the advantage of easy interpretation, it treats all households below the poverty line identically, whether they are one dollar below the poverty line or are far below the poverty line. In response, I use the squared poverty gap along with the poverty rate as measures of poverty. The relevance of using multiple poverty measures is found in Gundersen and Ziliak (2004), where the influence of the macroeconomy and social policies differed depending on choice of poverty measure. As it pertains to poverty in nonmetro areas, Jolliffe (2003) demonstrates that the differences in poverty between nonmetro and metro areas depends on the choice of poverty measure.

Third, unlike previous research which has concentrated on either all families or single parent families (Brown and Lichter, 2004; Snyder and McLaughlin, 2004), I consider the effects of the macroeconomy and social policies on all families, families with children headed by a single mother (female-headed households), and families with children headed by a married couple (married-couple households). Given the differences in poverty by family type (e.g., female-headed households have higher poverty rates than married-couple households), one may imagine that the macroeconomy would have differential impacts on poverty across these groups. These differences are especially relevant for

nonmetro areas which have a higher proportion of low-income households headed by a married couple in comparison to metro areas.

This paper also contributes to the broader literature on the effects of the macroeconomy and social policies on poverty. As noted above, this literature has concentrated on the U.S. as a whole, neglecting the differences by metropolitan status. Since approximately one-in-four Americans live in nonmetro areas, if there are differences by nonmetro/metro status, this will cause a reexamination of the effects of the macroeconomy and social policies on poverty.

The results from this paper indicate that, consistent with previous research, the macroeconomy does have a pronounced effect on poverty in both metro and nonmetro areas. This is true for all households, for female-headed households and married-couple households. These effects do differ by location. In general, the effect of the unemployment rate and median wage growth on poverty is substantially greater in metro areas. The less pronounced influence of these factors in nonmetro areas coincides with a similar effect of increasing inequality on poverty in both metro and nonmetro areas. Thus, if growth is accompanied by increases in inequality, nonmetro areas will not benefit as much from the former but would still bear the brunt of the latter. The combination of cyclical and secular measures of growth indicates that the effect of the economic expansion of the 1990s on the poverty rate in metro areas was far greater than its effect on the poverty rate in nonmetro areas. However, the effects of the economic expansion are more similar across metro and nonmetro areas if one looks at the squared poverty gap. Alongside the macroeconomy, social policies (as manifest in the minimum wage, the EITC, and pre-

Welfare Reform waivers) also have an influence, albeit a less substantial influence, on poverty for female-headed and married-couple households in nonmetro areas.

Background and Empirical Model

Background

Poverty in the United States tends to be countercyclical insofar as an improved economy leads to declines in the poverty rate. This general relationship is displayed in Figure 1 which has the poverty rate and unemployment rate (one measure of the health of the economy) from 1988 to 2003. The poverty rate is further disaggregated by whether a household is in a metro or a nonmetro area. The poverty rate was higher in every year in nonmetro areas, with the largest difference in 1988 of 3.2 percentage points and the smallest difference in 1994 of 1.1 percentage points. On average, the poverty rate was 11.2 percent in nonmetro states and 9.3 percent in metro areas.

Figure 1 demonstrates the usual countercyclical relationship between the unemployment rate and the poverty rate and the differences between poverty rates in metro and nonmetro areas. However, these relationships at the national level mask the considerable heterogeneity between states. This heterogeneity is manifest both across states and, by metro status, within states. The highest average poverty rate among the nonmetro population in a state is 18.6 percent in New Mexico while the lowest is 5.9 percent in Iowa. (See Brown and Lee (1999) for more on the variation in poverty across nonmetro areas.) Among the metro population the states and figures are Washington, DC at 17.9 percent and Vermont at 4.6 percent.

Along with these average differences across states by metro status, over time there is also substantial heterogeneity within and among states; heterogeneity which is central to the choice of models in this paper. This can be seen in Figure 2 where two pairs of states from the south and from the midwest are displayed. These states are further chosen to reflect a high proportion of the population in nonmetro areas (Mississippi and North Dakota) and a high proportion in metro areas (Florida and Illinois)² In terms of differences over time, for example, nonmetro households in North Dakota had the lowest poverty rates of any of these four groups in 1995 but by 2002, had the second highest poverty rate. Or, to cite another example, poverty rates stayed fairly similar among metro households in Florida and Illinois and nonmetro households in North Dakota but they fell substantially among nonmetro households in Mississippi. Along with illustrating differences within and among states over time, a comparison of Figure 2 with Figure 1 demonstrates the differences between the trends within these states and the trends at the national level.

To demonstrate the need to look at differences within states by metro status, Figure 3 displays the poverty rates by metro/nonmetro status within two states with fairly equal portions of metro and nonmetro households. These states (Iowa and New Mexico) also have, respectively, the lowest and highest poverty rates among nonmetro households. In New Mexico, the poverty rates among nonmetro households are always higher than among metro households with the gap increasing during the mid-1990s, when poverty rates were falling in the country as a whole. In Iowa, nonmetro poverty rates were usually below those of metro areas with the exception of the mid-1990s when they surpassed those of metro areas.

Along with using variation at the state level to ascertain the effects of the macroeconomy on poverty, in this paper I also consider how the effects differ by household status. A breakdown by household status, broken down further by metro/nonmetro status is found in Figure 4. The poverty rate of female-headed households is much higher than households headed by married couples with children. Within both categories, the poverty rates for nonmetro households are higher in every year. While the absolute difference between metro and nonmetro areas is greater among female-headed households, the proportional difference between the poverty rates of married parent households is greater in nonmetro areas although this difference has been closing over time.

Empirical Model

To analyze the effect of the macroeconomy and social policies on poverty and, in particular, to isolate the effects of being in a nonmetro area on this relationship, the following model is estimated:

$$\ln(P_{\alpha,t}^{j,s,m}) = \rho^{j,m} \ln(P_{\alpha,t}^{j,s,m}) + \sum_{k=1}^K \beta_k^{j,m} E_{k,t}^{s,m} + \sum_{q=1}^Q \gamma_q^{j,m} W_{q,t}^s + \sum_{m=1}^M \phi_m^{j,m} R_{m,t}^s + \lambda_t^{j,m} + \mu^{j,m,s} + \varepsilon_t^{j,m,s} \quad (1)$$

where j denotes household type (all, female-headed, married-couple); s denotes a state; t denotes year; m denotes whether a household is in a metro or nonmetro area; P_{α} is the poverty measure (defined below); E_k is the cyclical macroeconomic indicator k ; W_q is the measure of wage levels and inequality q ; R_m is the social policy indicator m ; λ_t is a year fixed effect; μ^s is a state fixed effect; and ε is a random error term. Along with the

coefficients for the models estimated on the metro and the nonmetro samples (i.e., for $m=\text{metro}$ and $m=\text{non-metro}$), I am also interested in whether the effects of these variables differ by metro status.

In a departure from the previous work looking at the effect of the macroeconomy on poverty in rural areas, I use two measures of poverty in this paper.³ These can both be portrayed by the Foster, Greer, and Thorbecke (1984) class of poverty measures

$$P_{\alpha,t}^s = \frac{1}{n_t^s} \sum_{q=1}^{Q_t^s} \left(\frac{z_t - y_t^q}{z_t} \right)^\alpha \quad (2)$$

where n is the population, Q is the number of poor households, z is the household-size specific poverty threshold, and y is income. The choice of α defines the poverty measure. As α increases there is a corresponding increase in the weight ascribed to the poorest households. In this paper, I use two values of α , $\alpha=0$ (the poverty rate) and $\alpha=2$ (the squared poverty gap). The squared poverty gap meets two appealing axioms – the monotonicity axiom (all else equal, a reduction in a poor family's income increases the poverty measure) and the transfer axiom (all else equal, a transfer of income from a poor family to a poor family with a higher income must increase the poverty measure). The poverty rate meets neither of these axioms while the poverty gap ($\alpha=1$) satisfies the monotonicity but not the transfer axiom.

The extent of poverty as measured by the squared poverty gap is seen in Figure 5. As with the poverty rate, the average squared poverty gap over this time period in nonmetro areas is higher than in metro areas. In distinction to the poverty rate, however, in some years the squared poverty gap is almost the same in metro and nonmetro areas. This

is consistent with the nonmetro-metro differences between the poverty rate and more distribution sensitive measures of poverty found in Jolliffe (2003).

A lagged poverty measure is used in equation (1) to portray the persistence in poverty that tends to occur at the household level (Stevens 1999). A further advantage of the dynamic specification is its ability to distinguish between the short-run (e.g., β_k) and the long-run (e.g., $\beta_k / (1 - \rho)$) effects of the macroeconomy and social policies on poverty. Two state-level measures of the macroeconomy are used – the unemployment rate and the per-capita employment growth rate. These two measures portray cyclical macroeconomic forces. The use of multiple measures of cyclical economic forces is akin to Jensen et al. (1999) and Slack and Jensen (2002) in different contexts. The vector \mathbf{W} includes a quadratic in the median wage which is a more secular measure of economic growth although it also includes cyclical components.⁴ Previous research has demonstrated that the effects of economic growth can be sharply diminished if accompanied by increases in inequality (e.g., Blank and Card, 1993; Cutler and Katz 1991; Gundersen and Ziliak 2004)⁵. To reflect the effect of inequality, the ratio of the 80th to the 20th percentiles of wages is included as a variable.

To portray the influence of state-level social policies on poverty in metro and non-metro areas, I employ the following measures at the state-level: pre-PWRORA waivers; post-PRWORA waivers; the maximum combined TANF plus food stamp benefits (AFDC plus food stamp benefits prior to 1996); the minimum wage; and EITC programs. As it pertains to the first two measures, prior to PRWORA, states could request waivers from the U.S. Department of Health and Human Services to experiment with differences from the federally mandated welfare rules. The waivers included time limits on the receipt of

benefits, work incentives (e.g., higher earnings disregards), and work requirements. Consistent with the use of others (e.g., Blank 2001; Ziliak, Gundersen, and Figlio 2003), I aggregate these waiver types into one “any-waiver.” For states implementing waivers in the pre-PRWORA era, the “Pre-PRWORA” waiver is set to one if a state has a waiver, zero otherwise with fractions for a subset of the year. These variables are all set to zero after the implementation of PRWORA. The post-PRWORA variable is assigned in a similar manner except now all states had to implement a new welfare program after 1996. While there is variation in when states implemented PRWORA from 1996 to 1998, from 1999 to 2003, this variable is set to one for all states. Our third policy variable also reflects state choices about the construction of their welfare systems. Prior to being granted the ability to make changes to the structure of their programs, the maximum combined benefit level was the only discretion available to states in the construction of their AFDC programs. This discretion continues even after the implementation of TANF. The combined benefit level variable is constructed by taking the difference between (the log of) a state’s maximum combined TANF plus food stamp benefit level for a three-person family and subtracting this from (the log of) this average for the country as a whole. The possible effect of this variable is unclear. On the one hand, a higher benefit level leads to a higher income, leading to a decline in the squared poverty gap and, if the income increase was high enough, a decline in the poverty rate. On the other hand, higher benefit levels may lead to declines in the supply of labor and subsequent aggregate declines in income.

The final two state-level policies are the minimum wage and the EITC. States have the option of setting the minimum wage higher than the federal minimum wage. For states with a higher minimum wage, I use the (log) difference between the two minimums. (This is

set to zero for states with minimum wages equal to the federal minimum.) The effect of a higher minimum wage is not immediately clear. Households in states with higher minimum wages will, *ceteris paribus*, have higher incomes but the higher minimum wage may lead to higher rates of joblessness. (For more on these possible effects see, e.g., Card and Krueger 1995; Neumark and Wascher 2002.) To control for state-level EITC policies which supplement the federal EITC program, I use the (log) difference between the federal and the state maximum benefit level. (This is set to zero for states without an EITC program.) Like the minimum wage and the maximum TANF plus food stamp benefit level, the effect of EITC is unclear. The EITC raises income but, over some ranges, the labor supply of household members is predicted to decline. The literature on which effect dominates is mixed (Meyer and Rosenbaum 2000; Neumark and Wascher 2001).

Data

The CPS is used to construct the majority of the state-level measures used in this paper. The CPS is administered monthly by the Census Bureau for the Bureau of Labor Statistics to approximately 50,000 households and is used to calculate the official poverty rates for the U.S. In this paper I use data from the March Demographic Files from the CPS for the years 1989 to 2004. The questions in the CPS refer to the previous year and so our analyses refer to the years 1988 to 2003. Using the CPS, by state, I obtain data on total income and wages for all households and broken down further by the marital status of the household head. With this information, I then construct, by state, the poverty rate, the squared poverty gap, the median wage, the median wage squared, and the ratio of the 80th to 20th percentile of wages. The median wage measures are deflated by the Consumer

Price Index-All Urban Consumers. Consistent with the official definitions of poverty, I restrict the sample to households which are defined as two or more persons living together who are related by birth, marriage, or adoption. For information on unemployment and per-capita employment growth rates, I use data from the Bureau of Labor Statistics (BLS). The information on the social policy variables are constructed from several different sources.

To estimate equation (1), the sample is divided into households in metro areas and in nonmetro areas. A metro area is defined as a county with a population of 50,000 or more, a county with an urbanized area, or a county with economic ties to a metro area (Jolliffe, 2003; Office of Management and Budget, 2000). Nonmetro areas are then defined as areas not meeting any of these criteria. One disadvantage to the CPS is the inability to identify households at a more disaggregated level by, say, Beale codes. Due to confidentiality reasons, this is not possible with the publicly available CPS data.

The small sample sizes of many states, especially for the nonmetro sample, means that the annual state estimates derived from income and wage information are susceptible to measurement error. In response, I construct three year moving averages of these variables. This is the method used in the official reports about poverty in the United States to make state-by-state comparisons (DeNavas-Walt et al. 2004: Table 8).⁶

Results

All Households

I now turn to the results from the estimation of equation (1) for all households. I first discuss the poverty rate ($\alpha=0$ in equation (2)) then the squared poverty gap ($\alpha=2$). The

results from both estimations are in Table 1. In all these estimations, the results are weighted by the relevant populations at the state level.

As seen in columns (1) and (2), the unemployment rate has an especially strong effect on the poverty rate in metro areas – a 1 percentage point increase in the unemployment rate leads to a 6.1 percent increase in poverty in the short run and an 8.3 percent increase in poverty in the long run. The effects in rural areas are much smaller in nonmetro areas where the respective figures are 3.2 percent and 4.4 percent. As seen in column (3) which displays the t-values for the difference between the coefficients in columns (1) and (2), the effects are statistically different from one another ($p=0.014$ for a two-tailed test). The stronger effect of the unemployment rate in metro areas is consistent with the findings of Jensen et al. (1999). A one percentage point increase in the other cyclical measure, employment growth rates per capita, leads to a 1.2 percent decline in poverty in nonmetro areas.

Growth in median wages is a strong predictor of poverty declines in metro areas but it has no effect in nonmetro areas. (This difference is statistically significant, $p=0.031$.) Evaluated at the average median wage, a one percent increase in median wages leads to a 1.7 percent decline in the poverty rate in metro areas. In contrast to the effects of median wages, in both metro and nonmetro areas, increases in inequality lead to increases in the poverty rate.

The indicators of state-level policies used here do not have any impact on the poverty rate. Only for the pre-PRWORA measure in nonmetro areas does it approach significance at usual confidence levels ($p=0.13$). The effect there is positive.

The results in columns (4) and (5) are for the squared poverty gap. In comparison to the effects on the poverty rate, the magnitude of the effect of the unemployment rate on the squared poverty gap is slightly stronger in metro areas but is almost twice as large in nonmetro areas. In metro areas, a one percentage point increase in the unemployment rate leads to an 8.2 percent increase in the squared poverty gap and, in nonmetro areas, it leads to a 6.3 percent increase. As a result of this increase in nonmetro areas, unlike for the poverty rate, the differences in the effect of the unemployment rate by metro and nonmetro areas are not statistically significant. The effects of changes in employment growth per capita on the squared poverty gap are also stronger in both metro and nonmetro areas when compared to the effects on the poverty rate. In nonmetro areas, a one percentage point increase in employment growth rates per capita leads to a 1.7 percent decrease in the squared poverty gap (versus 1.2 percent for the poverty rate). Like with the poverty rate, increases in real wages influences the squared poverty gap in metro areas but not in nonmetro areas. Increases in inequality lead to increases in poverty in both metro and nonmetro areas and the effects are similar to that found with the poverty rate.

Unlike for the poverty rate, state-level social policies do have an effect on the squared poverty gap, at least in nonmetro areas. In non-metro areas, states with a ten percent higher minimum wage in comparison to the national minimum wage have a 0.5 percent lower squared poverty gap. States with pre-welfare reform waivers had squared poverty gaps which were 8.4 percent higher than states without waivers. In both cases, the effect in a nonmetro area is statistically significantly different than in metro areas.

Female-Headed and Married-Couple Households

I now turn to a consideration of whether the determinants of poverty rate differ in metro areas once one conditions on the marriage status of the household head. In Table 2, the results for married couples with children are in the left panel and the results for female-headed households with children are in the right panel. As in Table 1, these are further broken down by metro and nonmetro status. The results in Table 3 are for the squared poverty gap.

The effect of the unemployment rate (and its differential by area) are similar for married couples and all households. (This can be seen by comparing columns (1) and (2) in Table 1 with columns (1) and (2) in Table 2.) However, for female-headed households, the effect of the unemployment rate is substantially smaller in metro areas and statistically similar in metro and nonmetro areas. As a predictor of the poverty rate, employment growth per capita only matters for female-headed households in metro areas. The median wage has no effect on the poverty rate of married couples. One possible reason for this lack of effect is the level of the average median wage of married couples with children in comparison to the poverty line. Working full time for 50 weeks a year implies an income from earnings of over \$23,000 for nonmetro households and over \$28,000 for metro households. In both cases, this is far above the poverty line for a family of two parents and two children in 1996 (the year with which wages are normalized): \$15,911. This same logic may also explain why median wages matter for female-headed households in nonmetro areas (where the average income from earnings is around \$15,000) but not in metro areas (average income from earnings, \$18,000).⁷ In the former case, the average is closer to the poverty line for a family of one parent with two children - \$12,461. While the

growth in median wages does not affect poverty for households headed by a married couple, increases in wage inequality leads to increases in the poverty rate for both metro and nonmetro areas. This wage gap has a small but statistically significant effect on poverty in nonmetro areas for female-headed households.

A further difference between the results for all households versus for married-couple and female-headed households is with respect to the effect of lagged poverty. When one looks at all households, the effect of lagged poverty is statistically the same for metro and non-metro areas. When the sample is broken down by married-couple and single-parent households, however, the effect of lagged poverty drops by almost 50 percent for non-metro households but not for metro households.

The state policy variables also have different effects when broken down by household status. Higher minimum wages lead to increases in the poverty rate of married couple households in metro areas (a 10 percent higher minimum wage in comparison to the national minimum wage leads to a 0.4 percent increase) but not in nonmetro areas, although the difference is not statistically significant at usual confidence levels. Conversely, in both metro and nonmetro areas, higher minimum wages lead to lower poverty rates for single parent households with the effect being over twice as large in nonmetro areas: Increases of 10 percent lead to 0.2 percent declines in metro areas and 0.6 percent declines in nonmetro areas. One possible explanation for the difference in married couple and female-headed households is that the possible negative employment impact of the minimum wage is dominant for the former but the increase in wage levels dominates for female-headed households. Given its targeted audience of single mothers with children, the lack of an effect of maximum combined TANF plus food stamp benefits on

the poverty rate of married couples is perhaps not surprising. In contrast, among female-headed households, the effect is stronger in metro areas. There, a state with a combined benefit level \$100 higher than average will have a 6.9 percent higher poverty rate. In nonmetro areas, however, the effect of benefit levels is insignificant.

As with the comparisons for the population as a whole, as seen in Table 3 the use of the squared poverty gap rather than the poverty rate leads to different conclusions about the effects of the macroeconomy and social policies. In comparison to the poverty rate, the effect of the unemployment rate on the squared poverty gap is substantially higher for married couple households but the effect is similar under the two measures for female-headed households. In comparison to the finding of insignificance for the poverty rate, the effect of growth in employment per capita has a statistically significant negative effect on the squared poverty gap for all groups and areas with the exception of metro married couple households (where it is insignificant). Changes in the median wage have no effect on the squared poverty gap when broken down into these subgroups. With the exception of married-couple households in metro areas, changes in inequality also do not have any effect.

With two exceptions, the effect of the social policy variables are similar in both the poverty rate and squared poverty gap measures. The first exception is that the post-PRWORA waiver has a positive and significant effect on the squared poverty gap. One of the goals of PRWORA was to promote marriage. If this did occur, one possible conclusion from these results is that this led to a composition shift in non-metro areas such that the proportion of poor married-couple households increased. There is some reason to believe this may have happened: since welfare reform there has been an increase in the number of

teenage mothers getting married, a decline or leveling off of divorce rates, and a decline of unmarried childbearing (Lichter and Crowley 2002). The second exception is that the maximum benefit level no longer has any effect on poverty.

Simulations

Interpreting the combined effects of the economic factors in Tables 1 through 3 for metro and nonmetro areas is not straightforward. This is especially true since median wages and inequality of wages have both secular and cyclical components. One way to interpret these combined effects is to simulate what happens at various points in the business cycle. In Table 4 simulations are therefore provided for the trough of the 1990s recession (1992), the peak of the 1990s expansion (2000), and the trough (to date) of the 2000 recession (2003). In these cases the peaks and troughs are defined with respect to the unemployment rate. These simulations are for the poverty rate (top panel) and for the squared poverty gap (bottom panel) and further broken down by household composition. To aid in interpretation, antilogs of the dependent variables (i.e. the levels of the poverty rates and gaps) are reported.

Using the economic factors in the models from Table 1, the simulations demonstrate that economic expansion of the 1990 lead to a 17.0 percent decline in the poverty rate from the trough of 1991 in metro areas. In nonmetro areas, however, the decline in the poverty rate was substantially less 8.9 percent. When one looks at the squared poverty gap, a different story emerges. With this measure, the fall in poverty in metro and non-metro areas are more similar and of a higher magnitude, about 25 percent. So, the effect of the macroeconomy on the squared poverty gap is far more pronounced in

both metro and nonmetro areas and the difference in the effect by metro status is no longer evident.

To consider the long term trends of the impact of macroeconomic forces on poverty, I compare the trough of the 1990 recession with the current trough of the 2000 recession.⁸ For all households, the 11 year gap between the two troughs lead to decreases in the poverty rate – a 5.7 percent decline in metro areas and a smaller 3.9 percent decline in nonmetro areas. The declines in the squared poverty gap are slightly larger in percentage terms – 8.3 percent and 15.9 percent – and, like for the trough to peak comparison, reversed in comparison to the poverty rate.

Conclusion

In this paper I used data from 1988 to 2003 to analyze the effects of the macroeconomy and social policies on the poverty rate and the squared poverty gap. Of particular interest was whether these effects differ by metro/nonmetro status. I find that, especially for the macroeconomy, the effects, in general, do differ but how and whether they differ depend on the choice of indicator and choice of poverty measure. In these concluding remarks, I consider the policy implications emerging out of three of the principal findings of this paper.

First, the effects of the unemployment rate – probably the most closely followed macroeconomic indicator – has a far more pronounced effect on the poverty rate in metro areas than in nonmetro areas. However, if one uses the squared poverty gap as the measure of poverty, the effects of the unemployment rate are similarly strong in metro and nonmetro areas. These differences are mirrored in the simulations in this paper where the

fall in the poverty rate during the expansion of the 1990s and from the trough of the 1990 recession to the trough of the 2000 recession are larger in metro areas while the fall in the squared poverty gap is similar in the two areas. Thus, in looking at the effects of the unemployment rate, policymakers must be clear about (a) what areas they are evaluating and (b) what poverty measure they are using. Absent these clarifications, evaluating the impact of macroeconomic policies on poverty will be difficult.

Second, the effects of wage growth – a key indicator of the secular trajectory of a state’s economic status – differ by metro status and, unlike with the more cyclical measures like the unemployment rate, the differences hold across both poverty measures. The effects of wage growth are inversely associated with poverty in metro areas but they have no effect on poverty in nonmetro areas. Making matters worse for nonmetro areas is that increases in inequality (which often accompanies wage growth) do lead to increases in poverty. Insofar as state-level policies can influence wage growth, policymakers must be cognizant of the positive implications of this growth for metro areas but also that this growth may not have the same impact on nonmetro areas.

Third, the ability of state-level social policies to address the problems of poverty seem to be limited. In contrast, the national-level implementation of one of these programs, the EITC, has been shown to have important poverty-fighting properties (Gundersen and Ziliak 2004). While in some contexts, the effect of state social policies are statistically significant, the magnitude of these effects are small.

Figure 1:
State Poverty Rates by Metro Status and Unemployment, 1988-2003

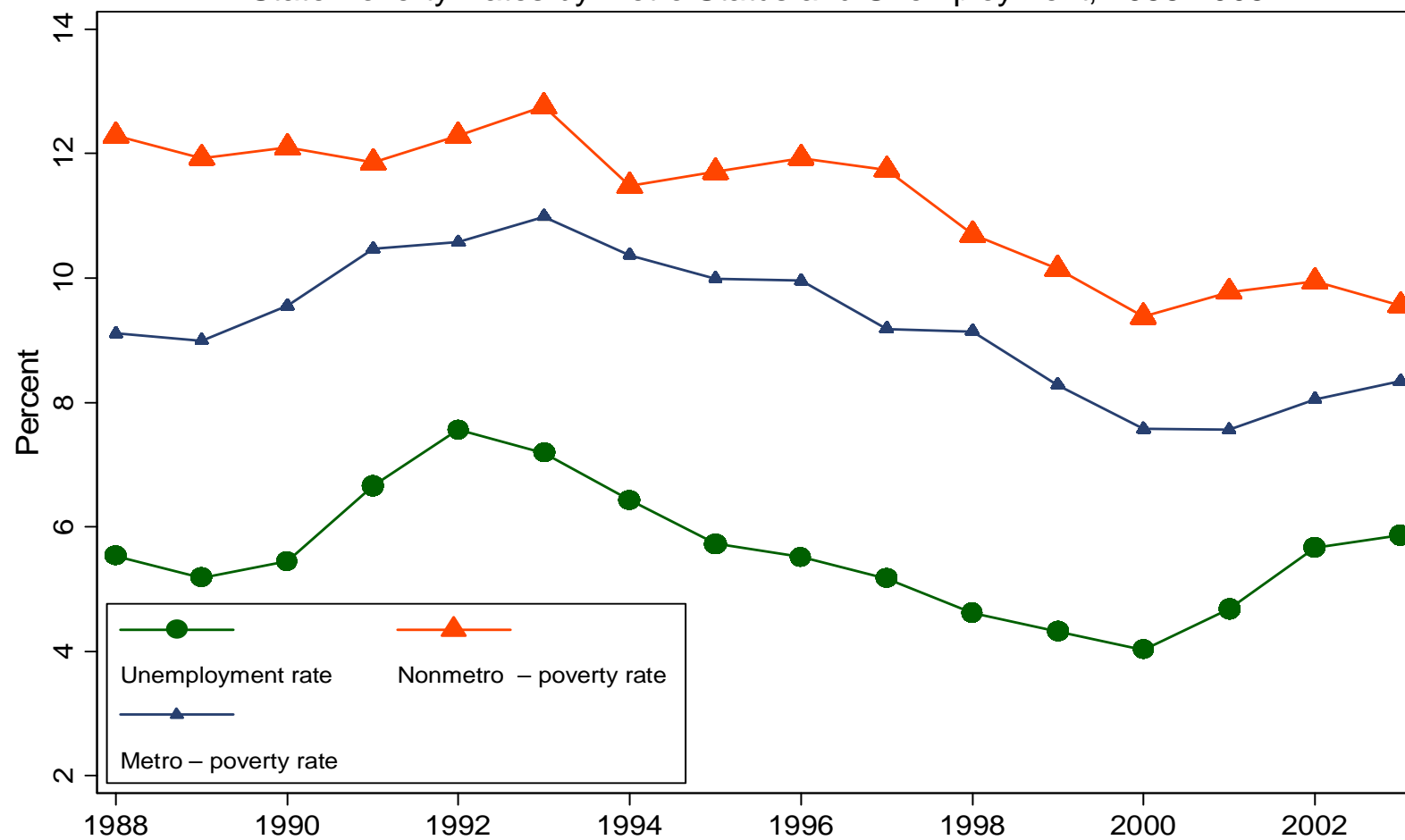


Figure 2:
Poverty Rates by Metro Status, 1988-2003: Selected States

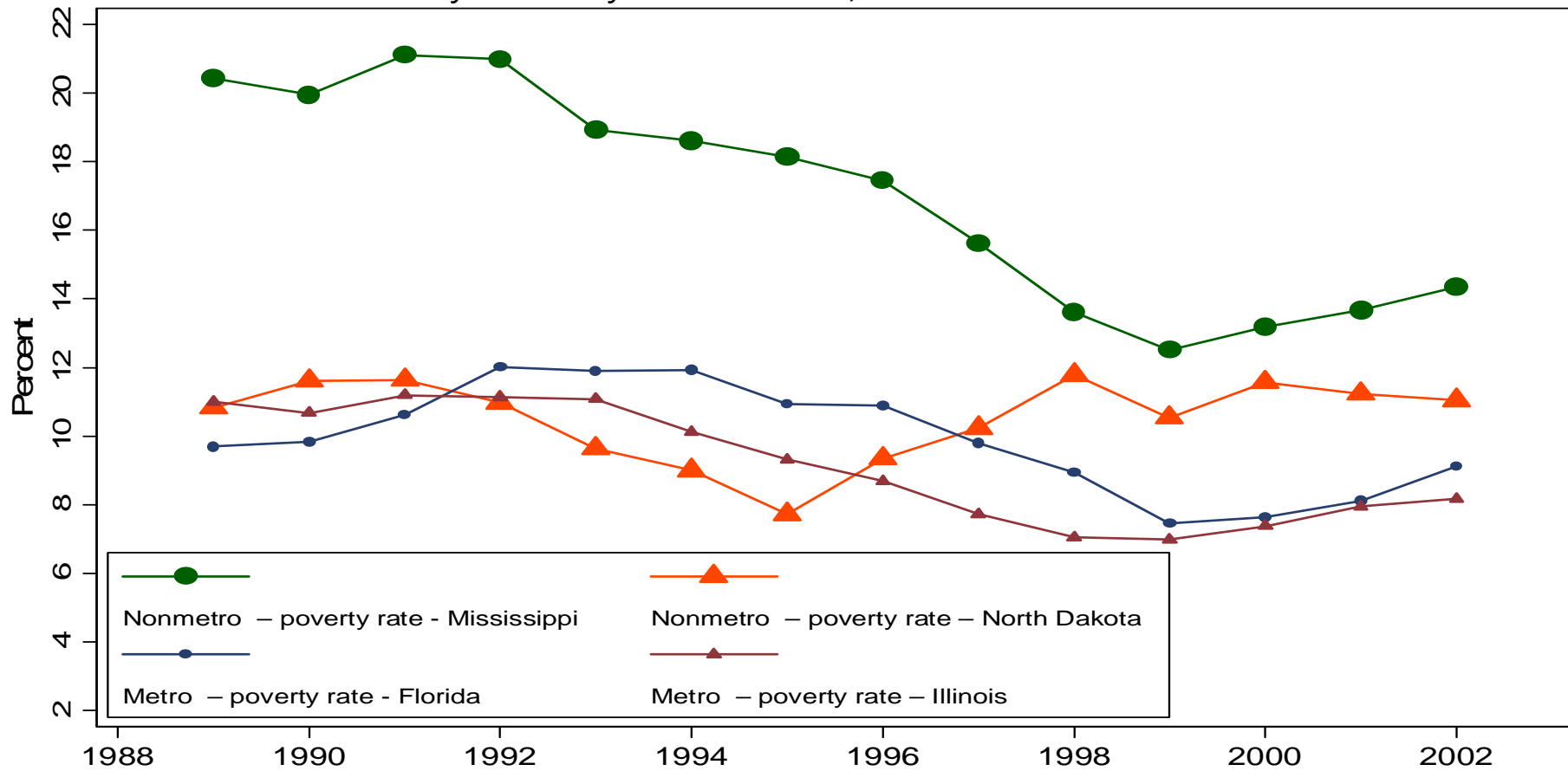


Figure 3:
Poverty Rates by Metro Status within States, 1988-2003: Selected States

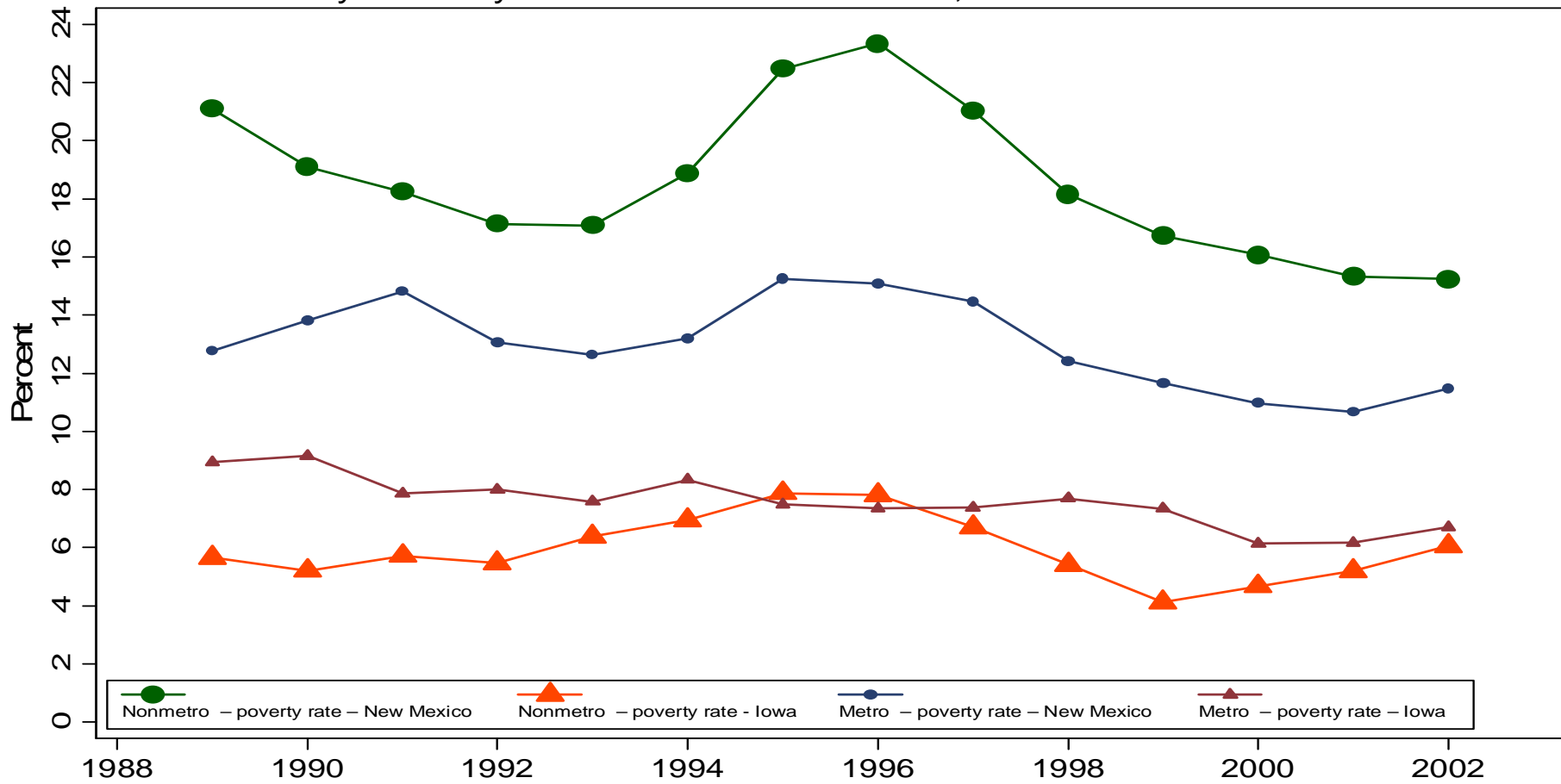


Figure 4:
State Poverty Rates by Metro Status, 1988-2003: By Family Structure

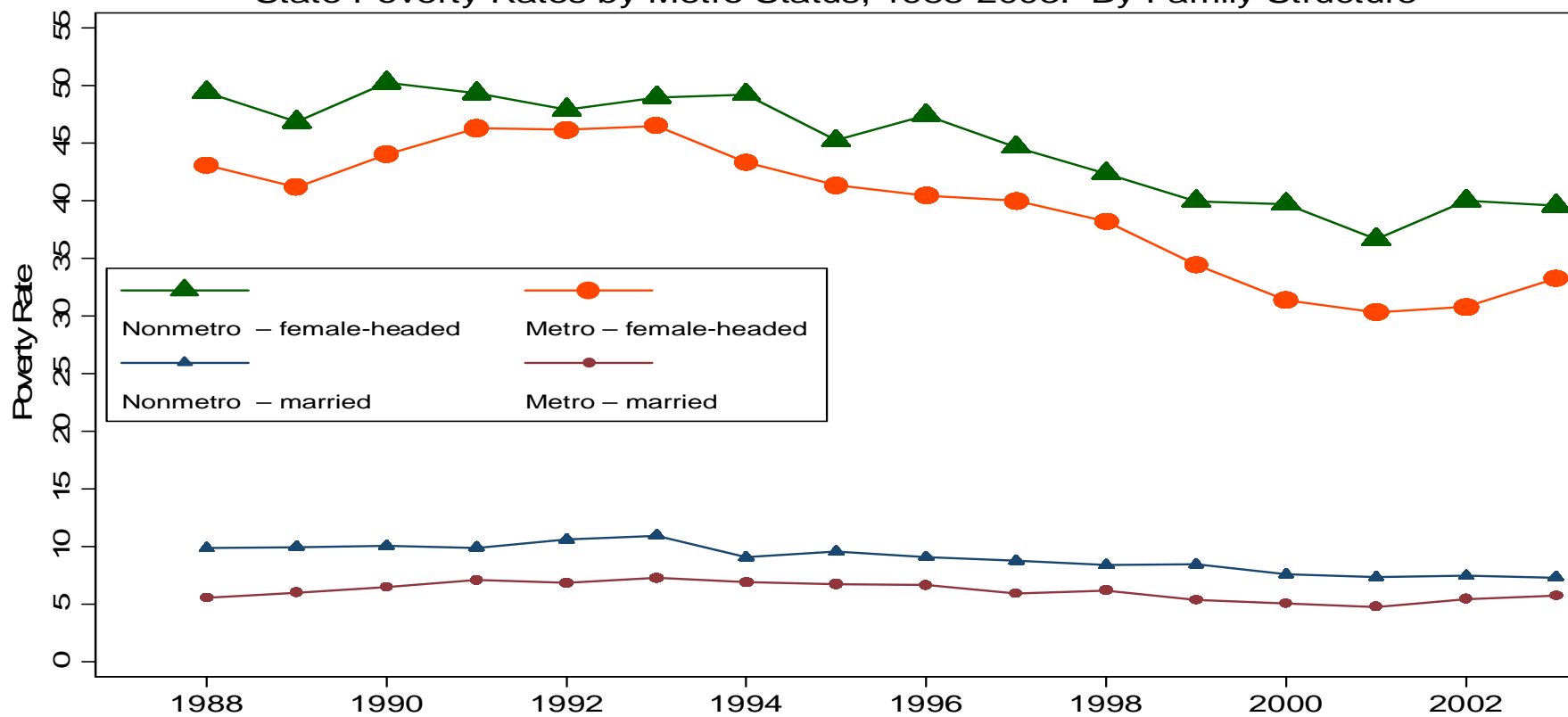


Figure 5:
Squared Poverty Gap in Metropolitan and Non-Metropolitan States, 1988-2003

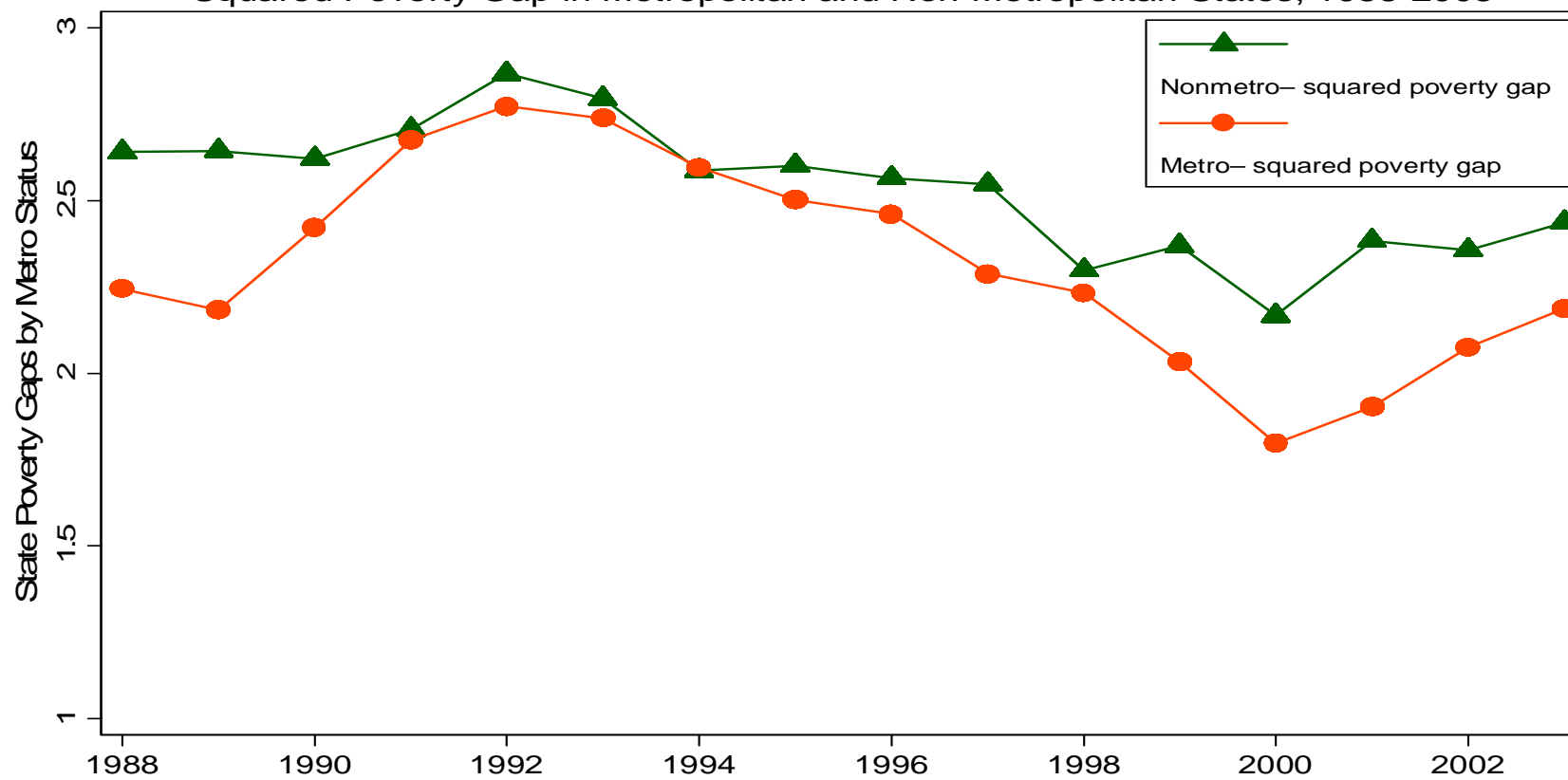


Table 1. Estimates of the Impact of Macroeconomic Performance on Poverty, 1988 to 2003

	Poverty Rate			Squared Poverty Gap		
	(1)	(2)	(3)	(4)	(5)	(6)
	Metro Areas	Non-Metro Areas	t-stat for difference	Metro Areas	Non-Metro Areas	t-stat for difference
Poverty(t-2)	0.262 (0.036)	0.277 (0.043)	-0.267	0.259 (0.037)	0.220 (0.044)	0.687
Unemployment Rate	0.061 (0.007)	0.032 (0.011)	2.199	0.082 (0.010)	0.063 (0.016)	0.993
Growth in Employment per Capita	-0.012 (0.004)	-0.011 (0.006)	-0.009	-0.020 (0.006)	-0.017 (0.009)	-0.282
Median Wage	-0.168 (0.078)	0.074 (0.109)	-1.808	-0.245 (0.122)	0.302 (0.189)	-2.437
Median Wage Squared	0.004 (0.003)	-0.007 (0.005)	2.005	0.007 (0.004)	-0.016 (0.008)	2.443
Ratio of 80th to 20th Wages	0.184 (0.032)	0.131 (0.036)	1.087	0.167 (0.047)	0.141 (0.057)	0.343
Log of State-Federal EITC	-0.016 (0.010)	-0.004 (0.028)	-0.389	-0.016 (0.018)	0.061 (0.039)	-1.791
Log of State-Federal Minimum Wage	-0.009 (0.010)	-0.021 (0.017)	0.623	-0.010 (0.012)	-0.047 (0.026)	1.294
Pre-PRWORA Waiver	-0.007 (0.016)	0.048 (0.032)	-1.552	-0.032 (0.026)	0.084 (0.050)	-2.053
Post-PRWORA Waiver	-0.033 (0.031)	0.032 (0.071)	-0.843	-0.000 (0.042)	0.067 (0.122)	-0.516
Log max AFDC/FSP benefit	0.119 (0.154)	0.137 (0.203)	-0.072	-0.394 (0.227)	0.216 (0.328)	-1.530

Notes: Standard errors are in parentheses. The results in column (3) refer to the difference between the coefficients in columns (1) and (2). The results in column (6) refer to the difference between the coefficients in columns (4) and (5).

Table 2. Estimates of the Impact of Macroeconomic Performance on Poverty Rates, 1988 to 2003: By Household Composition

	Married-Couple Households			Female Headed Households		
	(1)	(2)	(3)	(4)	(5)	(6)
	Metro Areas	Non-Metro Areas	t-stat for difference	Metro Areas	Non-Metro Areas	t-stat for difference
Poverty(t-2)	0.293 (0.038)	0.160 (0.049)	2.151	0.218 (0.037)	0.121 (0.044)	1.690
Unemployment Rate	0.075 (0.015)	0.031 (0.023)	1.577	0.043 (0.008)	0.032 (0.013)	0.729
Growth in Employment per Capita	-0.000 (0.011)	-0.014 (0.012)	0.858	-0.007 (0.005)	-0.004 (0.006)	-0.411
Median Wage	-0.067 (0.128)	-0.106 (0.166)	0.183	-0.026 (0.039)	-0.159 (0.040)	2.378
Median Wage Squared	0.000 (0.004)	-0.000 (0.007)	0.041	-0.002 (0.002)	0.005 (0.002)	-2.136
Ratio of 80th to 20th Wages	0.189 (0.057)	0.181 (0.053)	0.100	0.008 (0.010)	0.008 (0.003)	-0.021
Log of State-Federal EITC	0.001 (0.020)	0.004 (0.058)	-0.044	-0.018 (0.012)	-0.032 (0.033)	0.391
Log of State-Federal Minimum Wage	0.038 (0.019)	0.023 (0.043)	0.507	-0.021 (0.010)	-0.057 (0.021)	1.529
Pre-PRWORA Waiver	0.000 (0.035)	0.071 (0.071)	-0.899	-0.006 (0.020)	0.010 (0.030)	-0.431
Post-PRWORA Waiver	-0.014 (0.054)	0.079 (0.143)	-0.974	-0.062 (0.050)	-0.043 (0.066)	-0.223
Log max AFDC/FSP benefit	-0.134 (0.388)	-0.292 (0.389)	0.325	0.523 (0.189)	-0.115 (0.242)	2.080

Notes: Standard errors are in parentheses. The results in column (3) refer to the difference between the coefficients in columns (1) and (2). The results in column (6) refer to the difference between the coefficients in columns (4) and (5).

Table 3. Estimates of the Impact of Macroeconomic Performance on Squared Poverty Gaps, 1988 to 2003: By Household Composition

	Married-Couple Households			Female Headed Households		
	(1)	(2)	(3)	(4)	(5)	(6)
	Metro Areas	Non-Metro Areas	t-stat for difference	Metro Areas	Non-Metro Areas	t-stat for difference
Poverty(t-2)	0.203 (0.049)	0.176 (0.055)	0.381	0.264 (0.039)	0.157 (0.053)	1.632
Unemployment Rate	0.113 (0.024)	0.073 (0.031)	1.015	0.041 (0.011)	0.037 (0.021)	0.166
Growth in Employment per Capita	-0.020 (0.016)	-0.033 (0.016)	0.592	-0.022 (0.008)	-0.020 (0.012)	-0.147
Median Wage	0.147 (0.198)	-0.030 (0.267)	0.532	-0.110 (0.070)	-0.088 (0.080)	-0.206
Median Wage Squared	-0.007 (0.006)	-0.003 (0.011)	-0.300	0.003 (0.004)	0.002 (0.005)	0.097
Ratio of 80th to 20th Wages	0.197 (0.090)	0.099 (0.080)	0.814	0.014 (0.017)	0.002 (0.004)	0.711
Log of State-Federal EITC	0.036 (0.031)	-0.004 (0.069)	0.526	-0.015 (0.021)	0.049 (0.057)	-1.064
Log of State-Federal Minimum Wage	0.046 (0.031)	-0.018 (0.056)	1.789	-0.032 (0.015)	-0.073 (0.036)	1.076
Pre-PRWORA Waiver	0.027 (0.054)	0.107 (0.107)	-0.666	-0.028 (0.031)	0.003 (0.057)	-0.492
Post-PRWORA Waiver	0.102 (0.077)	0.335 (0.172)	-0.677	-0.076 (0.058)	-0.002 (0.152)	-0.456
Log max AFDC/FSP benefit	-0.673 (0.615)	-0.470 (0.539)	-0.262	-0.290 (0.305)	0.174 (0.381)	-0.952

Notes: Standard errors are in parentheses. The results in column (3) refer to the difference between the coefficients in columns (1) and (2). The results in column (6) refer to the difference between the coefficients in columns (4) and (5).

Table 4. Simulations of the Impact of Macroeconomic Performance on Poverty Rates and Squared Poverty Gaps: For All Households and by Household Type

	Metro Areas			Nonmetro Areas		
	All Households	Married-Couple Households	Female Headed Households	All Households	Married-Couple Households	Female Headed Households
	(1)	(2)	(3)	(4)	(5)	(6)
Poverty Rate						
Average Levels	8.57	5.02	36.99	10.90	8.62	42.99
Values from Trough of the 1990s Recession	9.04	5.25	39.80	11.42	9.01	45.22
Values from Peak of the 1990s Expansion	7.49	4.26	33.36	10.40	8.21	41.13
Values from Trough of the 2000 Recession	8.52	5.00	35.51	10.98	8.67	43.46
Squared Poverty Gap						
Average Levels	2.09	1.02	10.22	2.43	1.69	11.99
Values from Trough of the 1990s Recession	2.27	1.12	10.96	2.92	1.88	12.68
Values from Peak of the 1990s Expansion	1.77	0.81	9.18	2.06	1.52	11.34
Values from Trough of the 2000 Recession	2.08	1.01	9.75	2.52	1.72	12.10

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Endnotes

¹ Jensen, *et al.* (1999) is an exception in this literature insofar as they use annual data taken from the CPS for the years 1968 to 1993.

² In Figure 1 I used annual measures. Due to the smaller sample sizes in the nonmetro states, I use three year moving averages in figures with state-level information.

³ The use of more than just the poverty rate as a measure of poverty is also a departure from most of the previous broader literature looking at the effects of macroeconomy on poverty. Exceptions from this are DeFina (2002) and Gundersen and Ziliak (2004).

⁴ Wages are calculated by dividing total annual earnings by the usual number of hours worked times the number of weeks worked in the past year.

⁵ See Partridge, Partridge, and Rickman (1998) for a discussion of the variations across states over time in terms of inequality.

⁶ Because a three year moving average is used, the lag structure of equation (1) is modified slightly by replacing $t-1$ lagged variable with $t-2$ value. Under the assumption that ε is i.i.d., the $(t-2)$ lagged dependent variable is predetermined but is not endogenous.

⁷ For more on the reasons for lower earnings in nonmetro areas see, e.g., Galston 2000; Galston and Baehler 1995; and Smith 1993.

⁸ The unemployment rate in 2003 (5.9 percent) is still below that of 1992 (7.6 percent) so (at least with respect to the unemployment rate) the troughs are not identical in magnitude.